

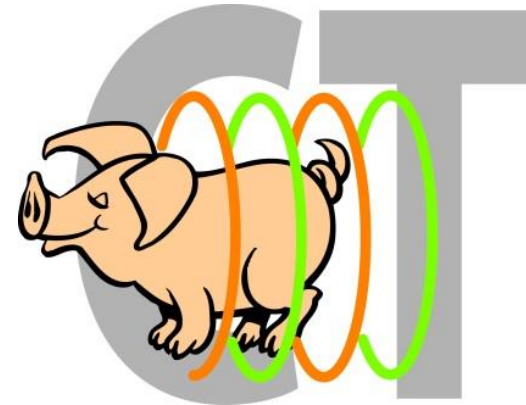


OnlineCT

for assessment of meat quality

Lars Bager Christensen

Peter Vorup, Karsten N. Rasmussen, Dennis B. Nielsen & Mikkel E. Jørgensen



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CT for the factory floor

Two applications:

Sorting of pig middles

Assessment of beef marbling

Developed prototype



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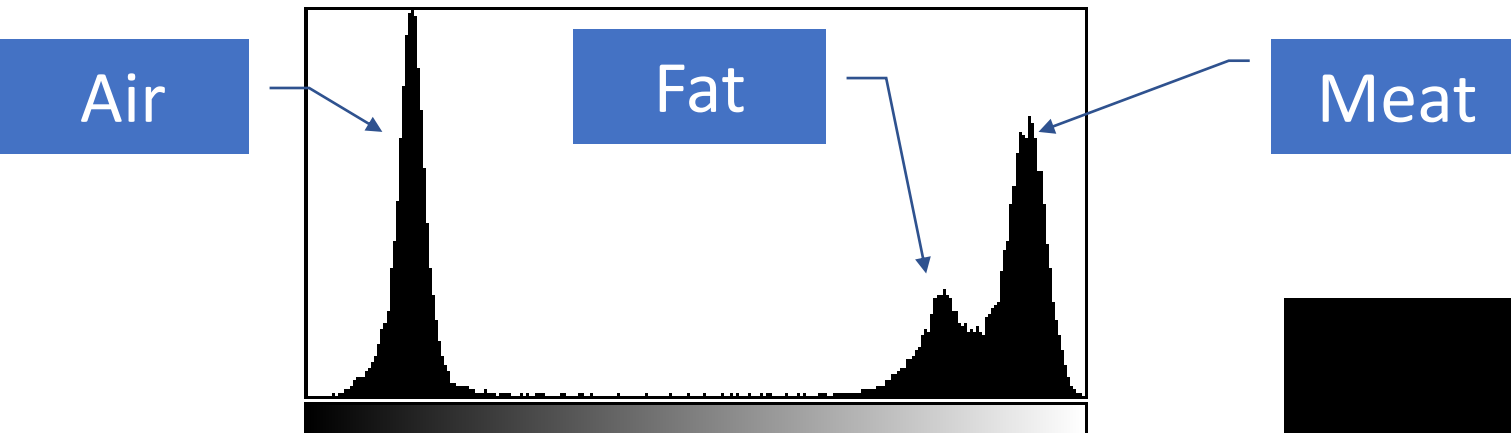


$$I = I_0 e^{-\mu d}$$

Volume details:

- ✓ 3D geometry
- ✓ Tissue density

Volume analysis: Morphology vs. Density

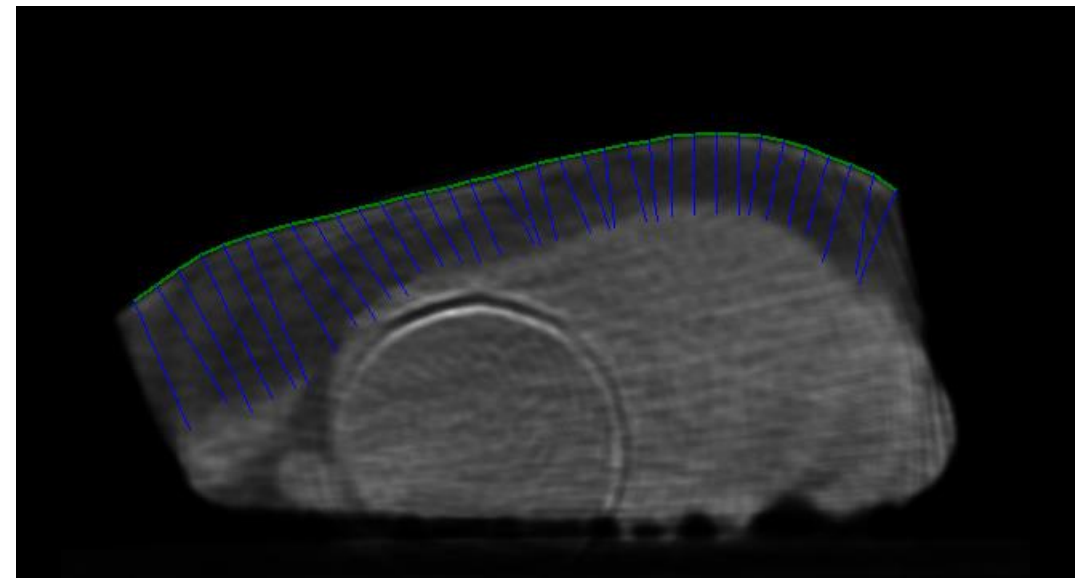


Local parameters

- Shape
- Position
- Thickness

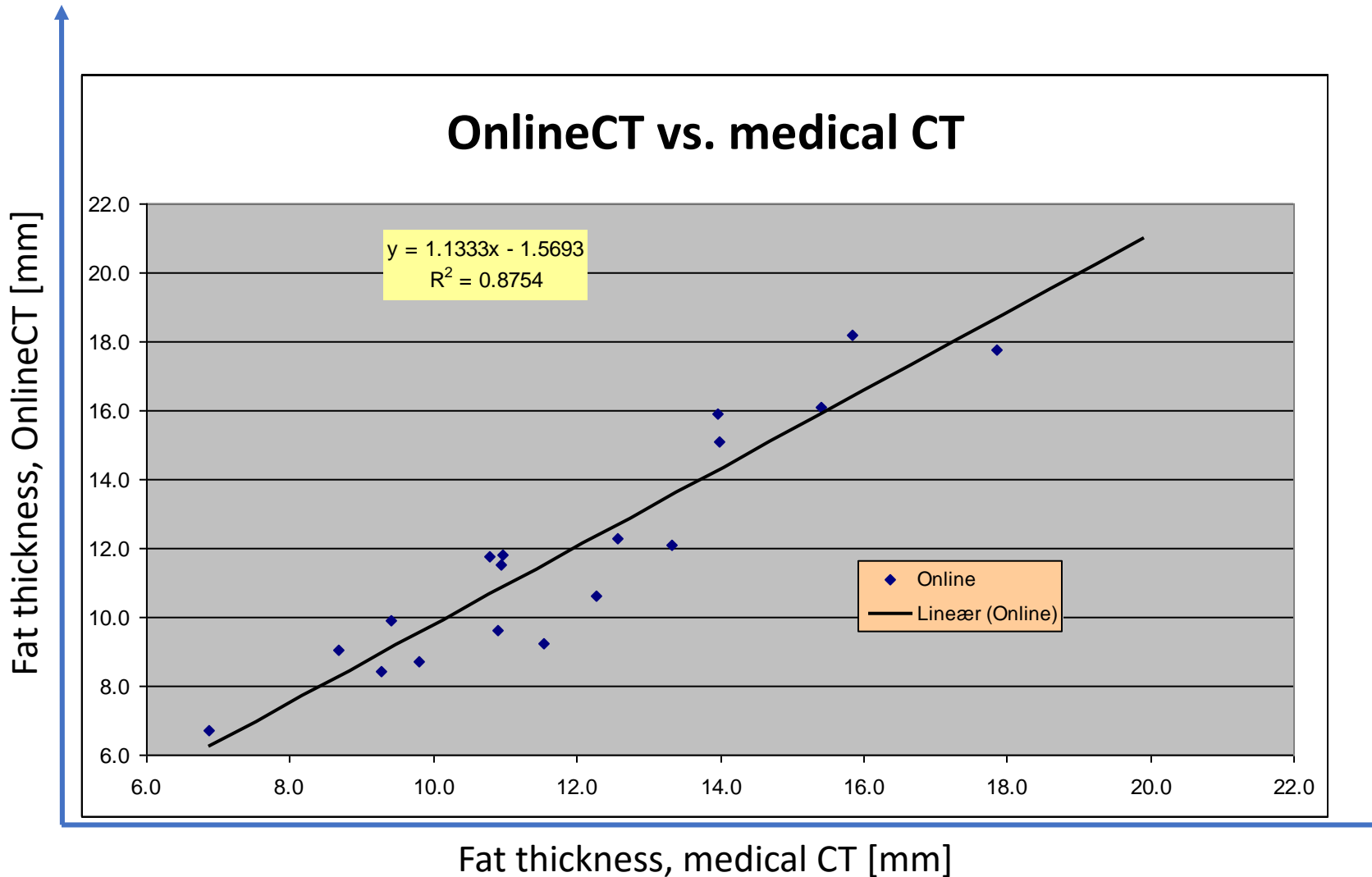
Global parameters

- Avg. density
- LMP
- Mixed voxels



Geometry information – subcutaneous fat layer

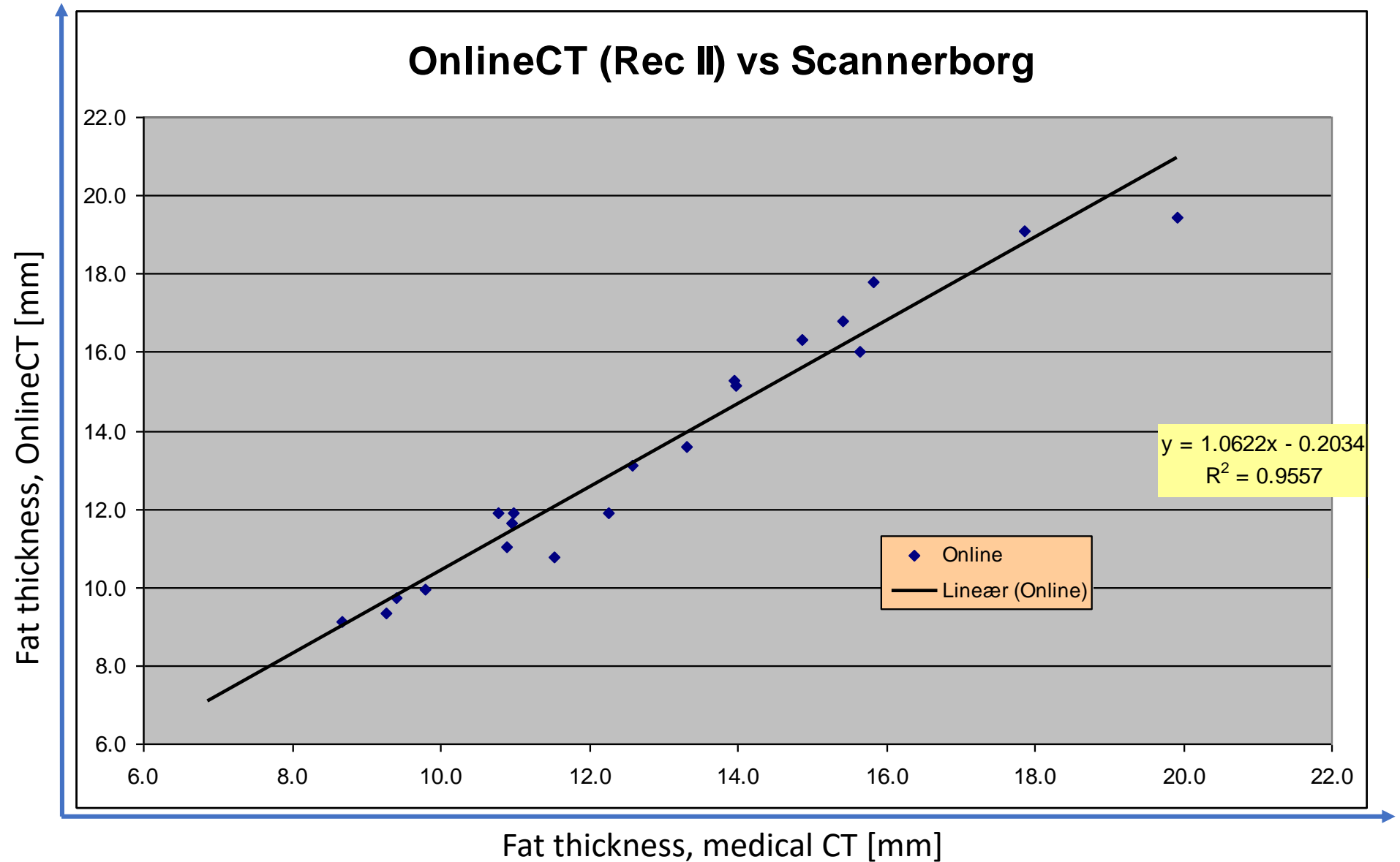
OnlineCT vs. medical CT



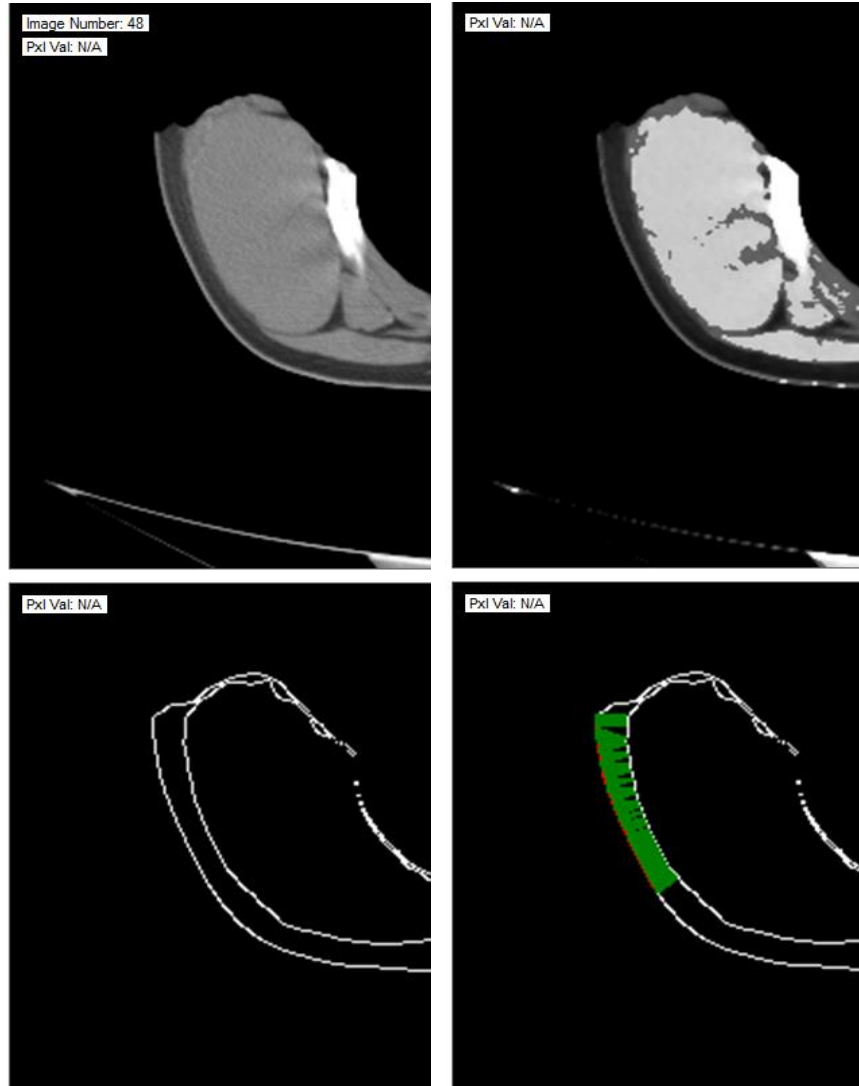
- 19 middles
- Medical reference
- Two operators
- Manually
- 144m/min
- Remove outlier

Adapted reconstruction – no outliers

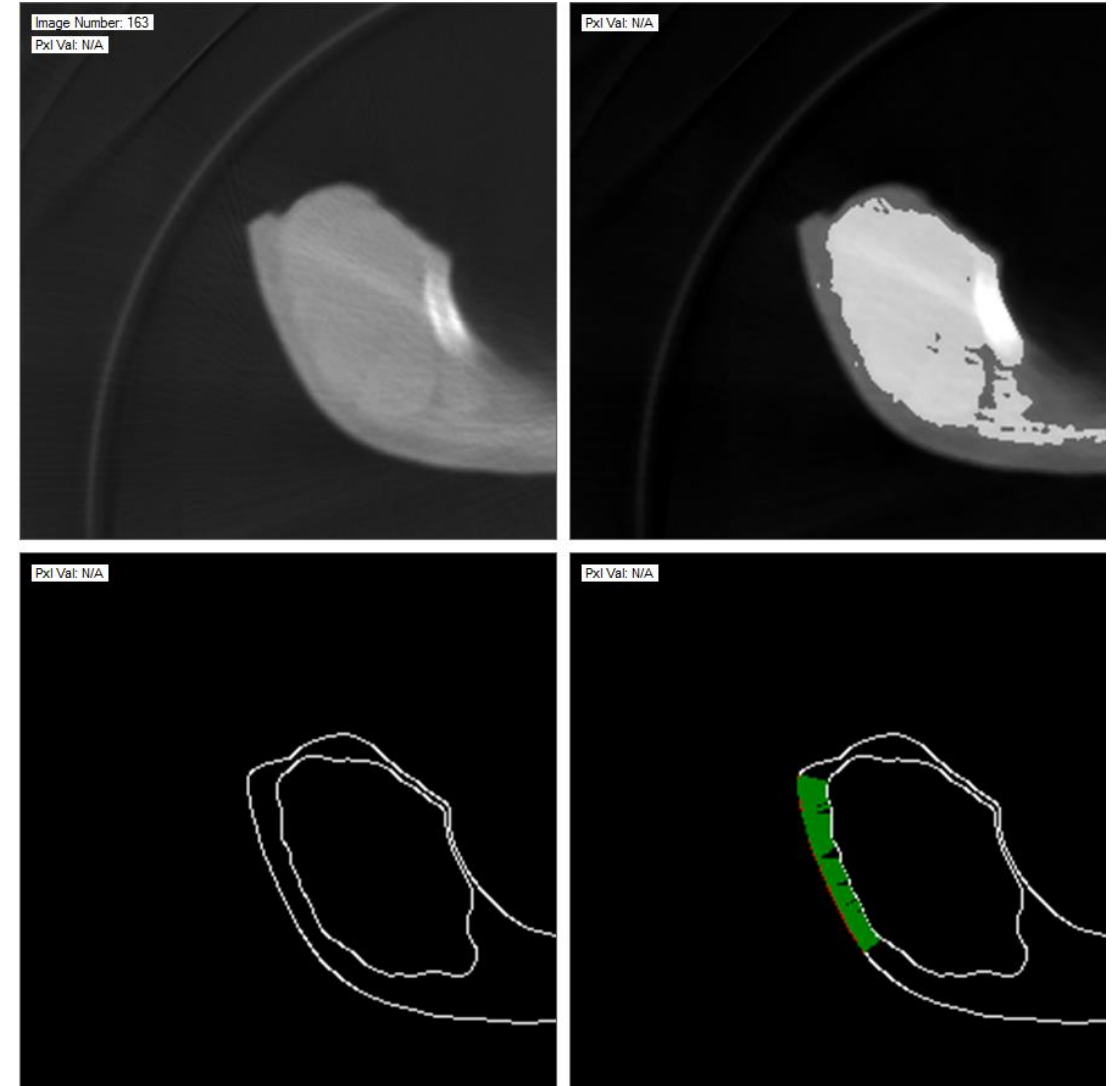
$SD_1 = 1.6\text{mm}$
 $SD_2 = 0.7\text{mm}$



Automated image analysis – ongoing experiment



Medical CT

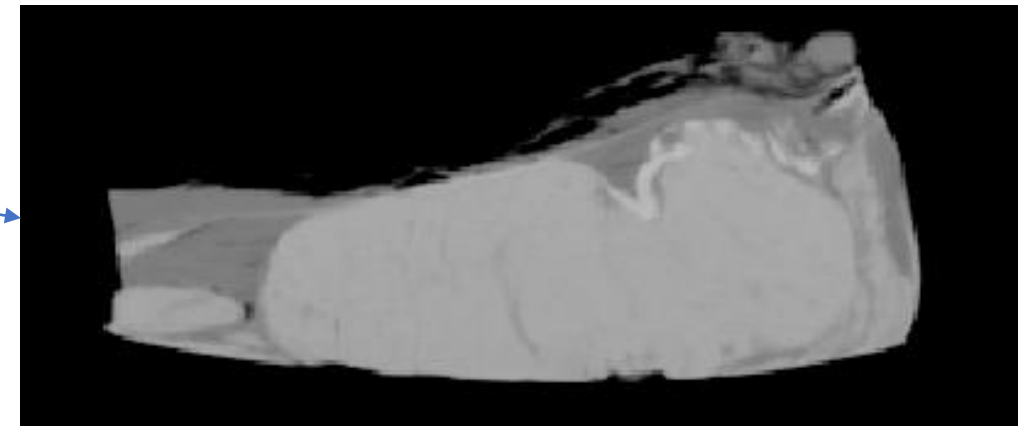
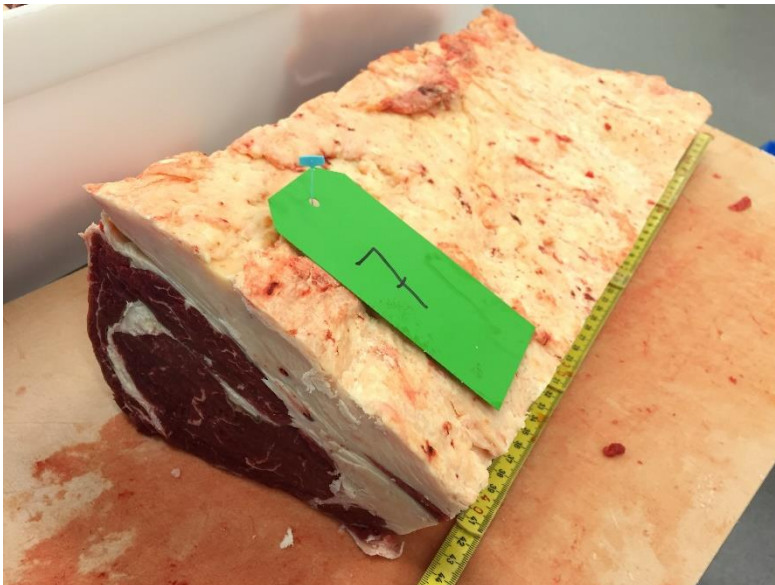
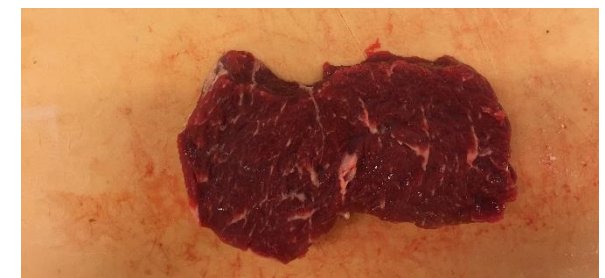


OnlineCT

Visual assessment using medical CT

7 Danish striploins

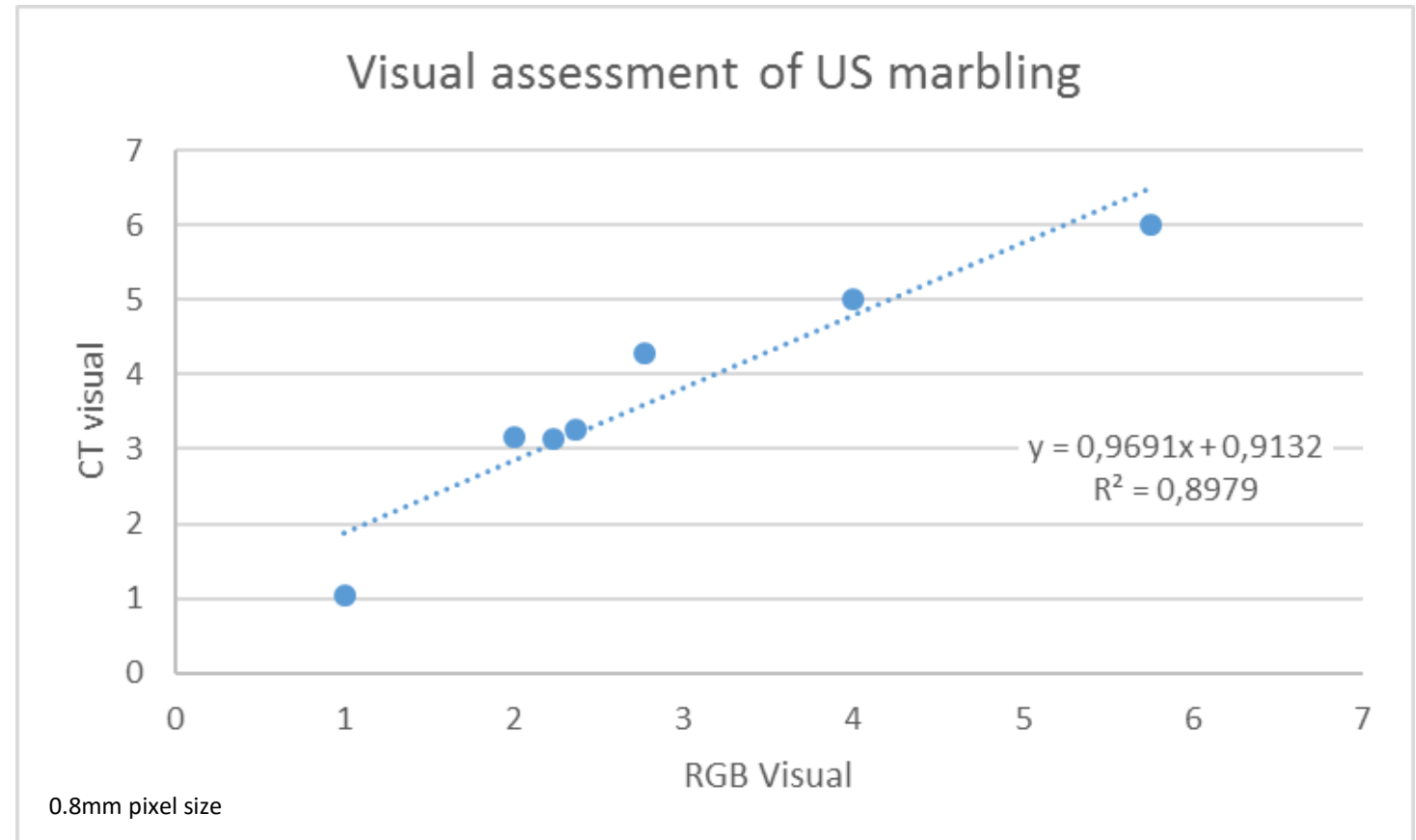
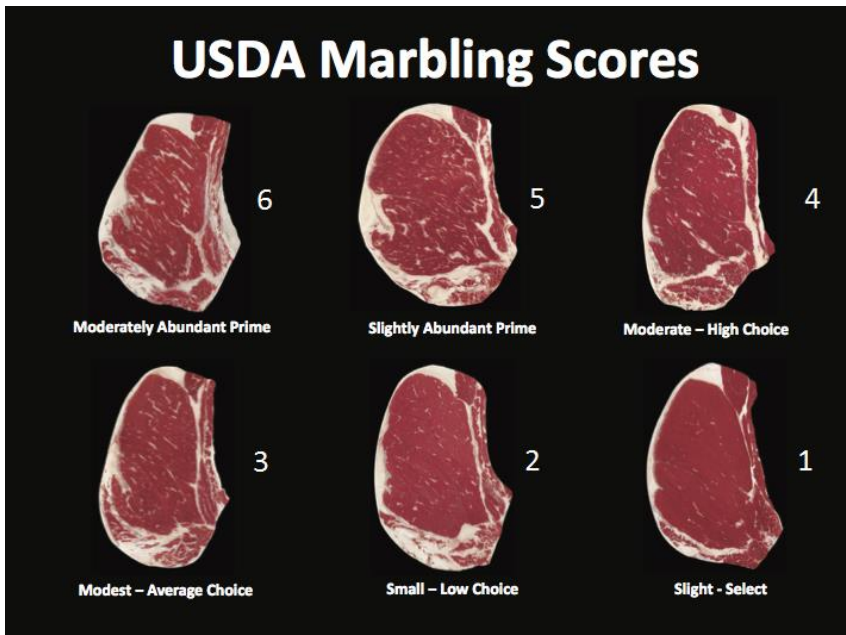
Subjective assessment of US marbling
from (N_1) trimmed 30mm steaks (ref)
from (N_2) 2mm CT images



Subjective assessment using medical CT



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X-rays in a production environment



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Challenges: Installation cost
Operational cost

Solution: Continuous cooling
Closed X-ray cabinet
< 5 μ Sv/h
2 years tube life expectancy



Wrap up and Questions

OnlineCT: Continuous cooling
24/7, $<5\mu\text{Sv/h}$
Lean, Fat and Bone
Shape and position

